

INSTRUCTIONS
AIR-LOC
SLEEVELESS JOINT TESTERS
42" THROUGH 120"
1100 mm THROUGH 3000

CHERNE INDUSTRIES INCORPORATED
5700 LINCOLN DRIVE
MINNEAPOLIS, MN 55436

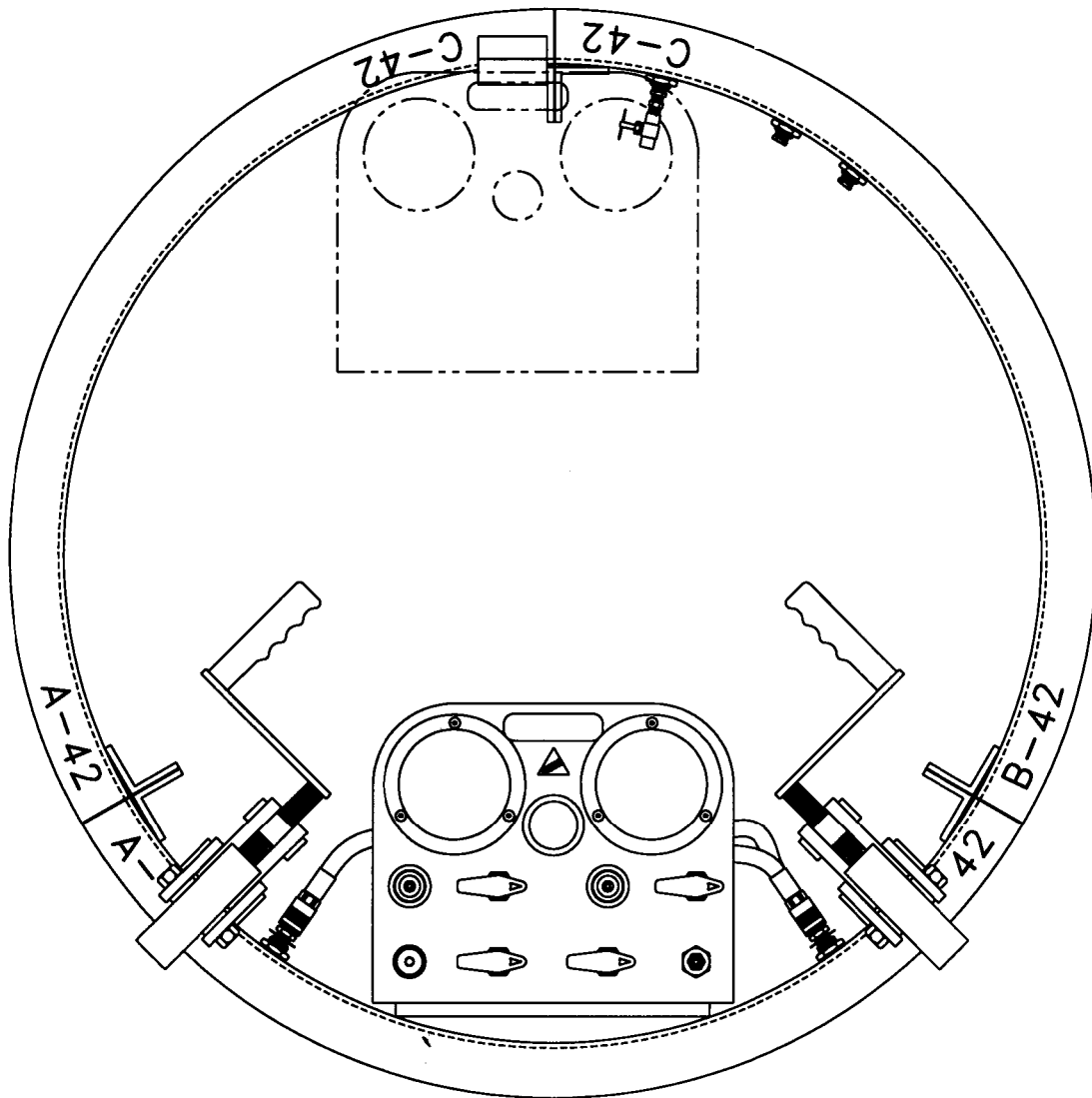


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INTRODUCTION

The Joint Tester measures leaks in pipeline joints. End elements create a sealed cavity along a joint into which either air or water can be pumped. A control panel monitors pressure within the cavity. Standard Joint Testers are made specifically for reinforced concrete pipe. Consult the factory for Joint Testers to be used in other types of pipe.

Cherne Industries manufactures joint testers ranging in size from 21 " (525 mm) through 120" (3,000 mm) . This manual provides information on how to assemble, operate, trouble shoot, and maintain Large Diameter Sleeveless Joint Testers.

NOTE: Custom sizes are available upon request in a wide variety of sizes and test pressures.

PACKING LIST (Refer to FIGURE 10, Page 20)

Inspect your Joint Tester for damage upon arrival. If damage is found the delivery carrier must be notified immediately so that you may file a claim. If the carrier is not notified immediately, they are within their rights to refuse any claims. When unpacking, care should be taken to be sure that all items are accounted for and that none are discarded with the packaging. Check the parts list for part numbers.

<u>ITEM</u>	<u>QUANTITY</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	1	Refer to page 19	Joint Tester Weld Assembly
2	3	Refer to page 19	Joint Tester Weld Assembly
		or	
		010-638	Gasket-Tapered Leg, 60" - 120" JT
3	2	Refer to page 19	End Element
5	4	104-132	Bulkhead, 1/4 Long neck
6	4	006-290	Washer-Flat, .75 D, .06" Thick
7	4	067-415	Washer, 3/4 Flat
8	4	006-282	Washer, 3/4 Rubber-3/16" Thick
9	3	251-623	Nipple, 1/4 QD x 1/4 MPT
10	1	002-690	Reducer- 1/4MPT x 1/8FPT
11	1	055-948	Nipple- 1/8FPT
12	1	003-808	Valve-1/8FPT
13	2	251-607	Plug-Brass, 1/4 NPT
15	2	067-008	Wheel Assembly, 39" - 54" JT or
		093-661	Wheel Assembly, 60 -95 JT or
		024-358	Wheel Assembly, 96" - 120" JT
16	17	068-136	Bolt, Carriage, 3/8-16 x 1.25 SS
17	8	118-974	Washer, 3/8 Bolt, Neoprene
18	17	000-051	Washer, 3/8 Flat
19	8	000-159	Washer, 3/8 Lock
20	8	000-884	Nut, 3/8-16 Hex
21	1	010-048	Control Panel
22	1	013-008	Hose Assy, 12' JT Inflation
24	2	000-361	Bolt, MHH, 1/4-20 x 1/2"
25	2	000-132	Washer, Lock, 1/4
26	1	017-914	Disc, Red
27	1	017-922	Disc, Blue
28	1	017-930	Disc, Yellow
29	9	000-892	Nut, 3/8-16 Self Locking SS
30	5.3 oz.	016-808	Grease, Silicone

1. Observe all state and federal regulations when entering pipelines or manholes.
2. Follow the Manhole Safety Procedure at the end of this manual.
3. Wear a hard hat, safety glasses & ear protection during the operation.
4. Before you connect the air-input hose to the control panel, make sure both valves on the panel are OFF (counterclockwise).
5. Never inflate the end elements above ground or inside pipe that is larger than the design size of the Joint Tester.
6. Inflate end elements to 80 psig (5.5 Bar), but DO NOT OVER-INFLATE.
7. Inflate the test cavity to 50 psig (3.4 Bar), but DO NOT OVER-INFLATE.

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When you receive your joint tester, the only assembly required is connecting the control panel and installing the wheel assemblies. However, it may be necessary at some point to take apart and re-construct the frame and end elements. If so, carefully follow the FRAME ASSEMBLY and END ELEMENT installation instructions.

Improper assembly will cause your joint tester to leak during operation.

ASSEMBLING THE FRAME ASSEMBLING THE FRAME

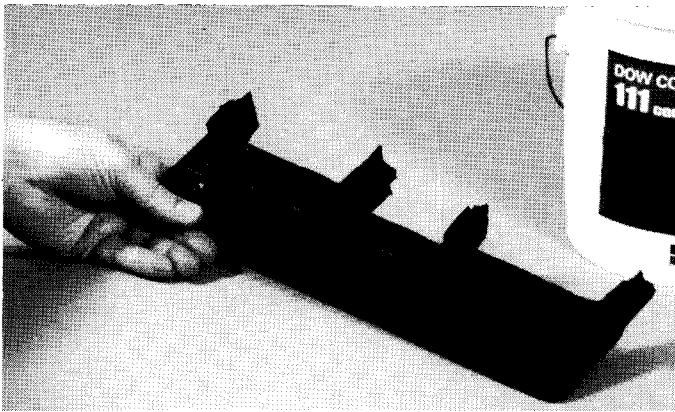


FIGURE A

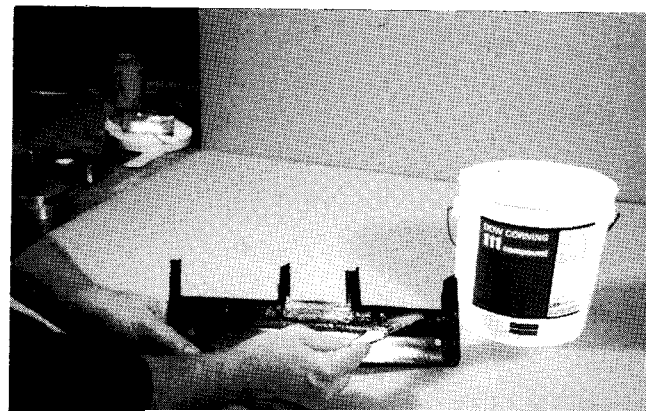
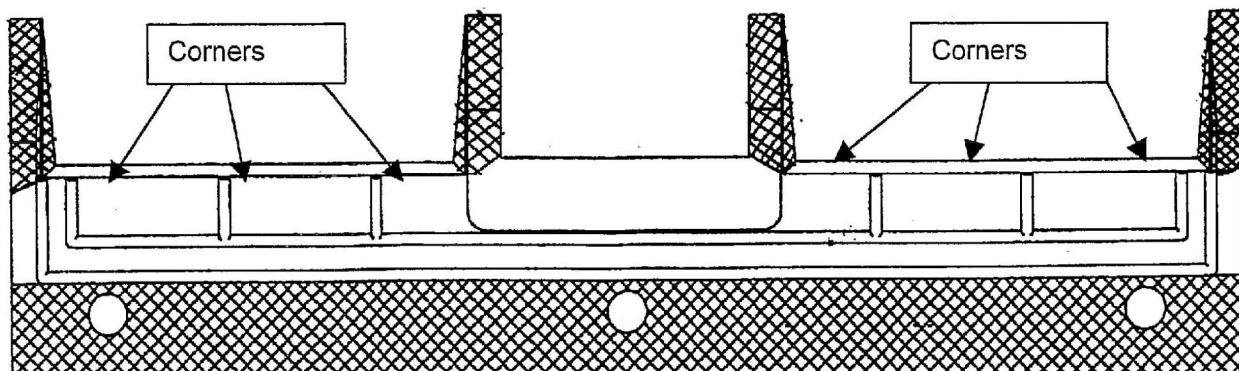


FIGURE A

1. Grab one of the two frame sealing gaskets. See FIGURE A. Find the tube of clear silicone grease provided with your joint tester. With a small brush, apply the silicone to both sides of the gasket in the area between the fins and the three bolt holes as shown in FIGURE B. **DO NOT** apply silicone in the shaded area shown in FIGURE C.

FIGURE C



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2. Lay the two sections of the frame on a flat surface in the form of a circle. Make sure the stamped identification marks on the outside edge of the frame match as shown in FIGURE D.
3. Place the gasket (coated with silicone) on the end of the frame section as shown in FIGURE E.

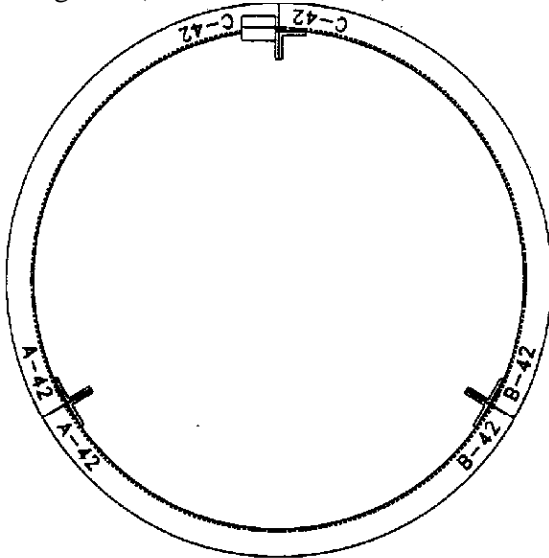


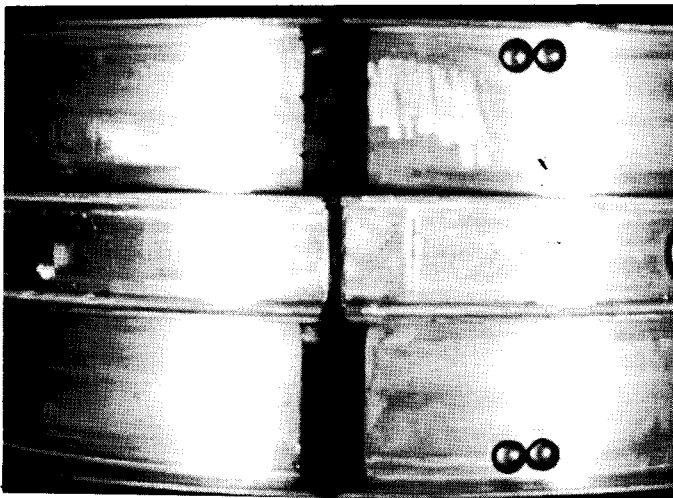
FIGURE D



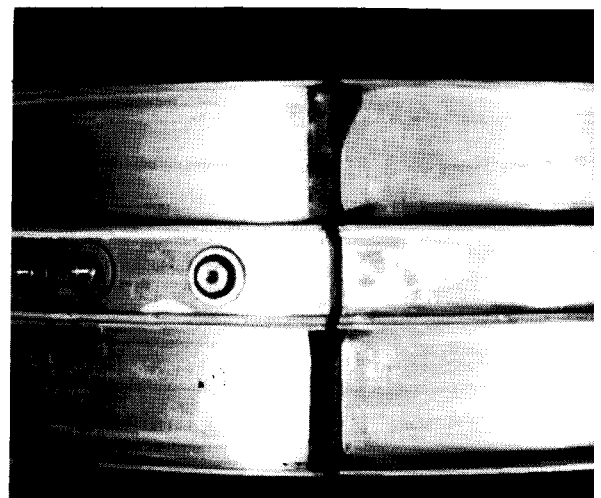
FIGURE E

4. Slide the ends of the frame *sections together* to secure the sealing gasket as shown in FIGURE F.
NOTICE: Proper gasket installation is critical! Make sure the sealing gasket is installed as shown in FIGURE F; NOT as shown in FIGURE G.

RIGHT



WRONG!



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FIGURE H

5. Refer to FIGURE H. Fasten the sections together by installing the 3/8 carriage bolts, flat washers and self-locking nuts. Only hand tighten the hardware at this time.

6. Repeat Frame Assembly steps 1 through 5 to join the other ends of the frame.

7. Refer to FIGURE I. Tighten the center *carriage bolt* and *self-locking nut* on each bracket with a wrench.

8. After each center bolt and nut is fully tightened, tighten the top and bottom *carriage bolts* and *self-locking nuts* each bracket. While tightening with the wrench, press the gasket against the outer channel of the frame with your hand to make sure it stays in place. See FIGURE J.

9. Repeat Frame Assembly steps 7 and 8 to make sure each gasket is evenly compressed.

10. Wipe off any excess grease from the gaskets and frame.



FIGURE I

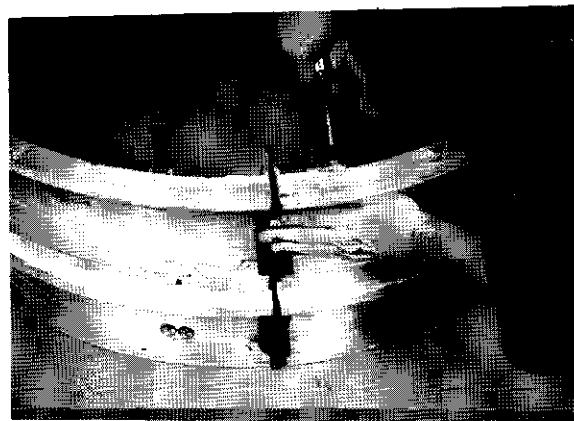


FIGURE J

INSTALLING THE END ELEMENTS

(You will need two people)

1. Insert eight $3/8$ -16 x 1-1/4" carriage bolts and $3/8$ rubber washers into the frame wheel bracket mounting holes. (Make sure the threads of the carriage bolts are on the inside of the frame). Install the $3/8$ lock washers and thread the $3/8$ hex nuts onto the carriage bolts. Only hand tighten the hex nuts at this time. This hardware will be used to later mount the wheel assemblies.
2. Refer to FIGURE 3. On the outside of the frame, insert the brass end and element inflation fitting through the hole in the top channel of the frame. On the inside of the frame, secure the brass end element inflation fitting using the star washer and hex nut supplied with the end element.
3. Refer to FIGURE 4. Carefully stretch the end element over the joint tester (by hand or with the aid of pry bars) and into the top channel section of the frame. Corn starch, silicone, or soapy water may be used if desired.

NOTE: Make sure the outer strip of the gasket doesn't become pinched under the end element. If it does, carefully pry the end element away from the joint tester frame and press the gasket back into its original position.

4. Turn the joint tester over and repeat steps 2 and 3 for the second end element.

NOTE: If pry bars are used, the edge of the joint tester frame must be filed smooth if it has nicks or sharp edges.

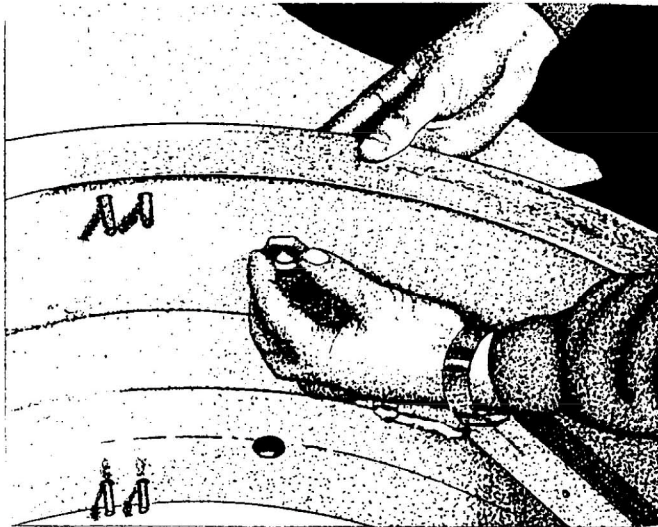


FIGURE 3



FIGURE 4

CONTROL PANEL HOOK-UP AND WHEEL ASSEMBLY INSTALLATION

1. Refer to FIGURE 5. Using the 1/4-20 x 1/2" bolts and 1/4 lock washers, mount the control panel on the control panel mounting pad located at the bottom of the joint tester frame. A bracket is also included at the top of the weld assembly as an optional location for the control panel.
2. Connect the hoses on the hose assembly from the control panel to the joint tester center cavity and end element inflation fittings. Make sure the hoses are connected between fittings with the same colored disc markers.
3. Refer to FIGURE 5. Fasten the wheel assemblies to the joint tester using the hardware pre-installed in step 1 on page 7.

NOTE: It is very important that the rubber washer remains properly seated on the carriage bolt, and that the square neck of the carriage bolt is properly seated in the square holes of the joint tester frame. Leakage may occur if an improper fit exists. After sliding the wheel assembly base onto the bolts, check the bolt for a proper fit. To make sure the bolt remains properly seated, apply pressure to the end element directly above the bolt until the lock nut is fully tightened.

CAUTION: NEVER STAND THE JOINT TESTER IN AN UPRIGHT POSITION WHERE IT IS NOT SUPPORTED BY THE WHEEL ASSEMBLIES. NEVER RELOCATE THE JOINT TESTER BY ROLLING IT ON END (ESPECIALLY OVER ROUGH SURFACES). EXTREME AMOUNTS OF PRESSURE ARE PLACED UPON THE JOINT TESTER IN BOTH OF THESE SITUATIONS WHICH MAY RESULT IN DAMAGING THE END ELEMENTS.

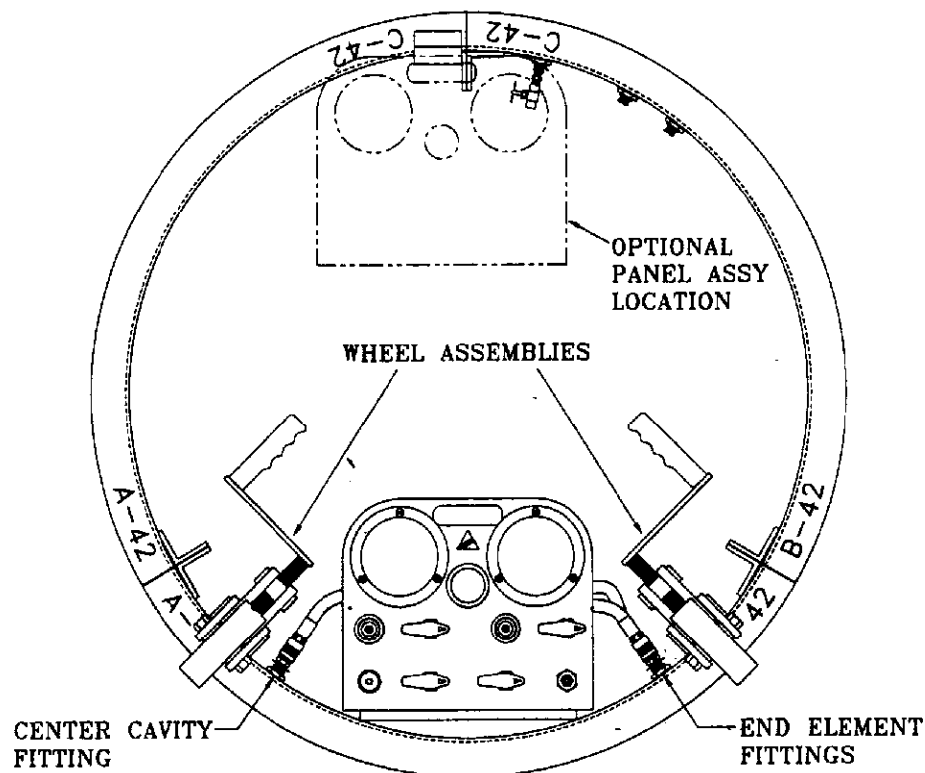


FIGURE 5

OPERATION

NOTE: Before joint testing begins, an air compressor or ample water supply (depending on the type of test media you're using) should be located above ground with a sufficient length of air hose capable of reaching all joints to be tested.

CAUTION: BEFORE OPERATING, BE SURE THAT THE 3-WAY VALVES ON THE CONTROL PANEL ARE IN THE "OFF" POSITION, AND THAT THE TEST PRESSURE AND END ELEMENT AIR REGULATORS ARE TURNED FULLY COUNTERCLOCKWISE.

1. Once completely assembled and inside the pipe, roll the joint tester to the first joint to be tested.
2. Refer to FIGURE 6. Place the joint tester in it's upright position so that each end element straddles the joint being tested.
3. Adjust the wheel assemblies so there is approximately a 1" space between the joint tester and the pipe wall. Adjust the height of the joint tester by turning the adjustment handles on the wheel assembly.

Note: Offset pipe joints require different wheel settings to compensate for pipeline irregularities. Extra care must be taken when positioning the joint tester over this type of joint.

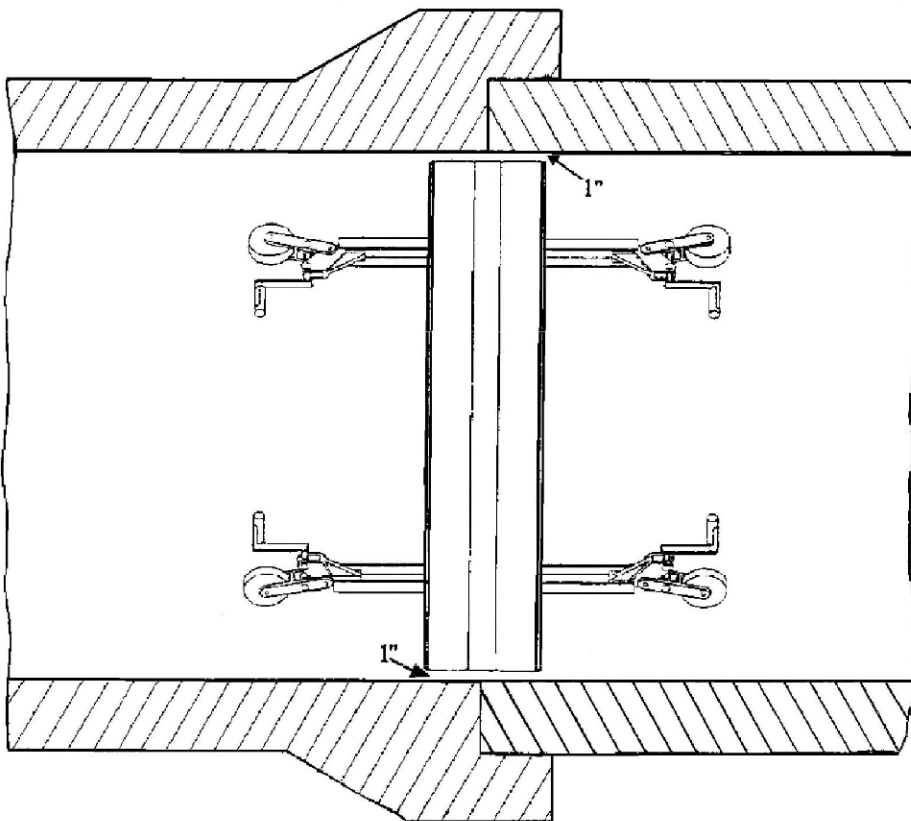


FIGURE 6

AIR TESTING PROCEDURE

1. Attach the air hose leading from the air compressor to the AIR In connection on the control panel and turn the air compressor on.

CAUTION: WEAR EAR PROTECTION WHEN INFLATING THE END ELEMENTS AND PRESSURIZING THE PIPE JOINT.

2. Place the end element inflation valve in the "FILL" position, and adjust the end element regulator by turning it in a clockwise direction until 80 PSI reads on the end element pressure gauge. Following this adjustment, place the end element 3-way valve in the OFF position.

CAUTION: DO NOT EXCEED 80 PSIG (5.5 BAR).

3. To pressurize the pipe joint, place the test pressure inflation valve in the "FILL" position. Turn the test pressure regulator dial in a clockwise direction until the specified test pressure is indicated on the test pressure gauge. Place the test pressure 3-way valve in the OFF position.

CAUTION: DO NOT EXCEED 15 PSIG (1.0 BAR).

NOTE: The end element and test pressure control regulators are now adjusted to their correct settings. All operational control adjustments hereafter are to be made using the 3-way control valves.

4. Monitor the test pressure gauge to determine the amount of time it takes to drop PSIG.

NOTE: Refer to your city, County and/or State Municipal Inspection Codes to determine the minimum allowable air loss/time ratio.

5. If the joint holds its pressure for the specified amount of time, it passes. If there is a loss of air pressure in excess of 1 PSIG during the required test period, the location of the joint should be noted and future repair will be necessary.
6. Relieve the test pressure by placing the test pressure 3-way valve into the "EXHAUST" position.
7. Deflate the end elements by placing the end element 3-way valve into the "EXHAUST" position.
8. When the end element pressure gauge reads "0" , disconnect the air hose, and roll the joint tester to the next joint to be tested. Repeat operation procedures.

CAUTION: ALWAYS DEFLATE THE CENTER CAVITY BEFORE DEFLATING THE END ELEMENTS.

WATER TESTING PROCEDURE

1. Attach the hose leading from the water supply to the WATER IN connection on the control panel. Attach the air supply to the panel as directed in step 1 of the AIR TESTING PROCEDURE.

CAUTION: WEAR EAR PROTECTION WHEN INFLATING THE END ELEMENTS AND PRESSURIZING THE PIPE JOINT.

2. Place the END ELEMENT inflation valve in the "FILL" position, and adjust the END ELEMENT regulator by turning it in a clockwise direction until 80 psig reads on the END ELEMENT PRESSURE GAUGE. Following this adjustment, place the END ELEMENT 3-way valve in the OFF position.

CAUTION: DO NOT EXCEED 80 PSIG (5.5 BAR).

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3. To pressurize the pipe joint, place the CENTER CAVITY valve in the "OFF" position. Turn the water supply on.
NOTE: Make sure the 1/8 inch female valve on the bulkhead assembly (located at the top of the joint tester) is in the open position before performing step 4.
4. Place the TEST MEDIA SELECT and the TEST GAUGE SELECT valves in the WATER TEST position. Water will slowly begin to enter the test chamber.
5. When a steady stream of water is bleeding from the 1/8 inch female valve on the bulkhead, place the CENTER CAVITY valve in the "OFF" position, and close the 1/8 inch female valve.
6. Slowly return the CENTER CAVITY valve to the ON position and adjust the water test pressure to the desired setting by monitoring the CENTER CAVITY WATER PRESSURE gauge.

CAUTION: DO NOT EXCEED 50 PSIG (3.4 BAR) WATER.

7. Place the CENTER CAVITY VALVE in the "OFF" position when the desired water test pressure is achieved.

NOTE: Refer to State/Federal municipal pipeline testing specifications regarding the correct test pressure.

8. Monitor the water test pressure gauge to determine the amount of time it takes for the water pressure to drop 1 PSIG.
NOTE: Refer to your City, Country, and/or State Municipal Inspection Specifications to determine the minimum allowable water loss/time ratio.
9. If the joint holds its pressure for the specified amount of time, it passes. If there is a loss in water pressure, the location of the joint should be noted for future repair.
10. To relieve the pressure, place the CENTER CAVITY valve on the control panel in the "EXHAUST" position. Water will then drain from the CENTER CAVITY exhaust port.
11. To deflate the end elements, place the END ELEMENT 3-way valve into the "EXHAUST" position.
12. When the END ELEMENT PRESSURE GAUGE reads "0", roll the Joint Tester to the next joint to be tested. Repeat Operation Procedures.

CAUTION: ALWAYS DEFLATE THE CENTER CAVITY BEFORE DEFLATING THE END ELEMENTS.

MAINTENANCE

1. Clean and inspect the entire unit at the end of each day.
2. The inflatable end elements and interconnect hose should be checked for excessive wear and damage
3. that may lead to possible leaks.

DAILY CHECK LIST

1. Pressure regulators checked for proper settings?
2. All fittings and hoses checked for leaks?
3. Air compressor checked for proper operation?

REPLACEMENT END ELEMENTS

Joint Tester replacement end elements are available upon request from CHERNE INDUSTRIES INCORPORATED. After receiving your replacement end elements, install them according to the installation procedures on page 7. Consult the components parts list for the appropriate part number.

TROUBLE- SHOOTING GUIDE

IF END ELEMENTS DON'T INFLATE...

- Connect the hose leading to the end elements.
- Connect the hose from your air compressor.
- Turn on your air compressor.
- Fix or replace an end element.
- Turn your end element regulator dial clockwise and to the right. Fix or replace the end element regulator.
- Fix or replace the end element 3-way valve.

IF THE END ELEMENT PRESSURE GAUGE READS THE WRONG PRESSURE...

- Check the hose leading to the end elements for kinks.
- Test and replace gauge if necessary.

IF END ELEMENTS LOSE PRESSURE WHEN VALVE IS TURNED TO "OFF" ...

- Fix or replace an end element.
- Fix or replace the hose leading to the end elements.
- Tighten the hose connections.
- Fix or replace the 3-way valve.

IF THE TEST PRESSURE GAUGE WON'T READ ANY PRESSURE...

- Have you found a leaking pipe joint.
- Connect or tighten the hose leading to the cavity. Fix or replace the hose going to the cavity.
- Verify that the test pressure regulator is on.
- Fix or replace the test pressure regulator.
- Fix or replace the 3-way valve.
- Test and replace gauge if necessary.

IF THE TEST PRESSURE READING ON THE GAUGE DROPS TOO QUICKLY...

- Have you found a leaking pipe joint?
- Replace the hose leading to the cavity.
- Tighten the hose connections.
- Clear debris off the pipe wall so no air leaks out between the wall and the end elements.
- Wet the pipe wall to see if air is leaking through the wall.
- Use epoxy or latex paint on pipe walls to seal the porous pipe.

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JOINT TESTER CONTROL PANEL PARTS LIST
(Refer to FIGURE 7)

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	010-038	CONTROL PANEL, RAW
2	1	017-358	GAUGE, LIQ. FILLED, 0-15 PSI
3	1	087-602	GAUGE, 0-60 PSI
4	1	014-838	GAUGE, 0-100 PSI
5	3	002-615	ELBOW 90, 1/4 FPT X 3/8 POLY
6	6	050-466	SCREW, BHM 10-32 X 3/8 SS
7	6	068-470	WASHER, #10 TOOTH LOCK, SS
8	6	050-512	NUT-HEX, #10-32 SS
9	17	002-593	ELBOW 90, 1/4 MPT X 3/8 POLY
10	4	007-892	VALVE, 3-WAY
11	4	251-623	NIPPLE, 1/4 QD X 1/4 MPT
12	1	017-922	DISC, BLUE
13	1	017-914	DISC, RED
14	1	017-930	DISC, YELLOW
15	1	251-690	ELBOW 90, 1/4 STREET
16	4	003-492	TEE, 1/4 STREET
19	6.25 FT	014-796	TUBING, 3/8 POLY
20	2	296-643	REGULATOR, 0-100 PSI OUTLET
21	2	002-518	BULKHEAD, 1/4
22	1	035-653	ADAPTER, 1/4 MPT X F GARD HSE
23	1	035-688	WASHER, GARDEN HOSE
24	1	012-978	MUFFLER, 9/16 DIA
28	1	024-848	LABEL-INFO. TO ZERO GAUGE

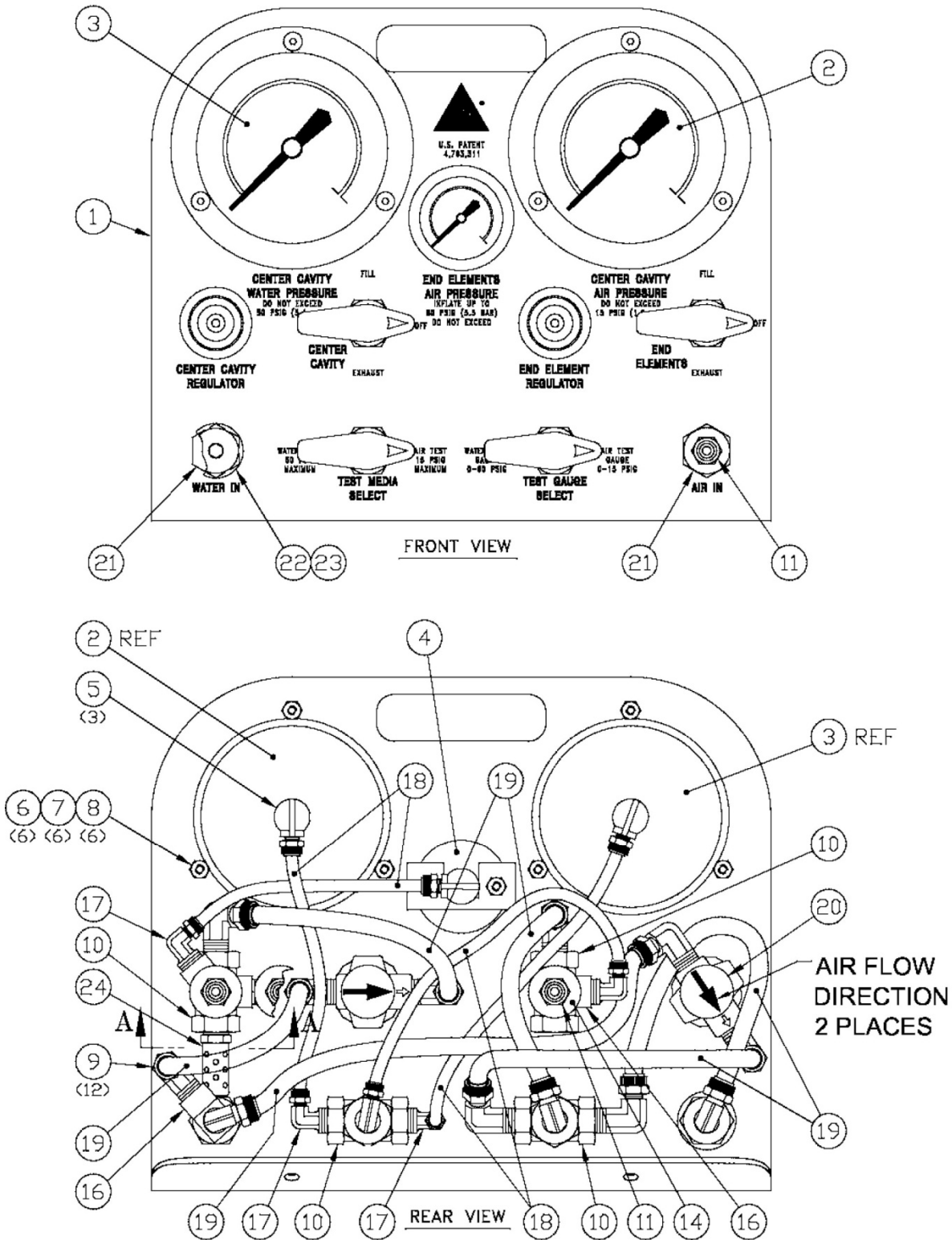


FIGURE 7

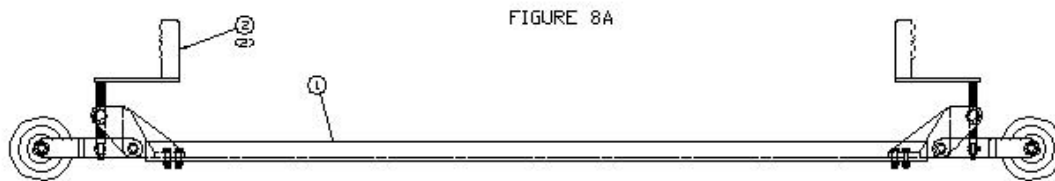
SLEEVELESS JOINT TESTERS

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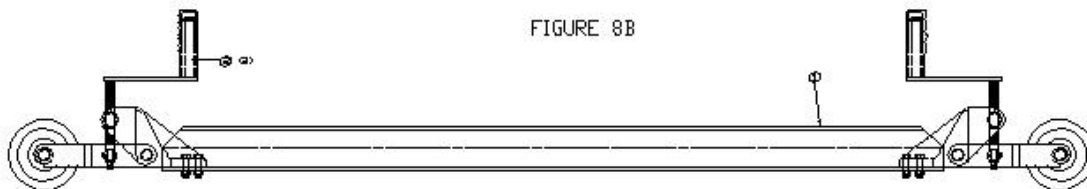
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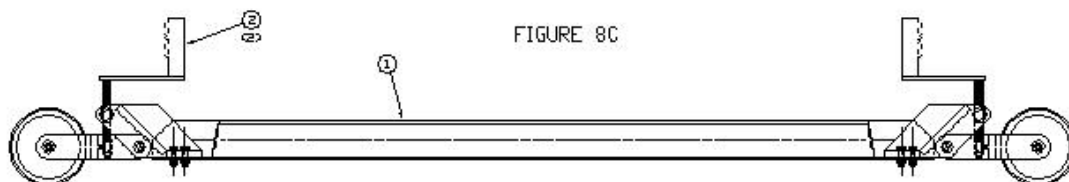
WHEEL ASSEMBLY COMPLETE (REFER TO FIGURES 8A, 8B AND 8C)



ITEM	PART NUMBER	QTY.	DESCRIPTION
1	066-826	1	BASE-WHEEL MNTG, 39' THRU 54'
2	004-000	2	WHEEL SUPPORT ASSY- ABOVE 36'



ITEM	PART NUMBER	QTY.	DESCRIPTION
1	300-241	1	BASE-WHEEL MNTG, 126' AND ABOVE
2	004-000	2	WHEEL SUPPORT ASSY- JT, 39' THUR 95'



ITEM	PART NUMBER	QTY.	DESCRIPTION
1	300-241	1	BASE-WHEEL MNTG, 126' AND ABOVE

WHEEL ASSEMBLY PARTS LIST (PN 004-000)
(SEE FIGURE 9)

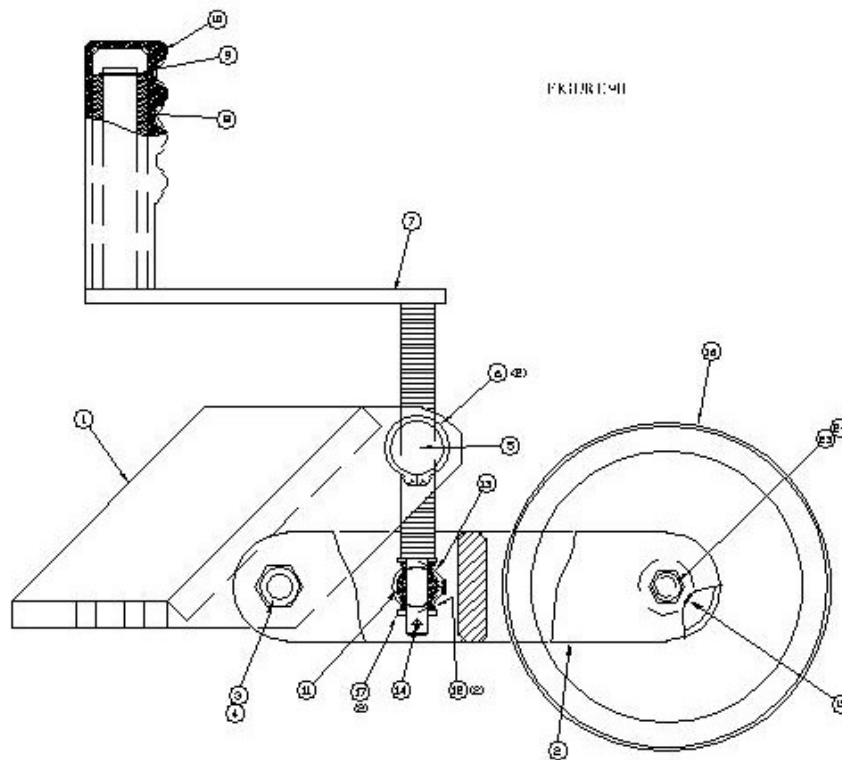
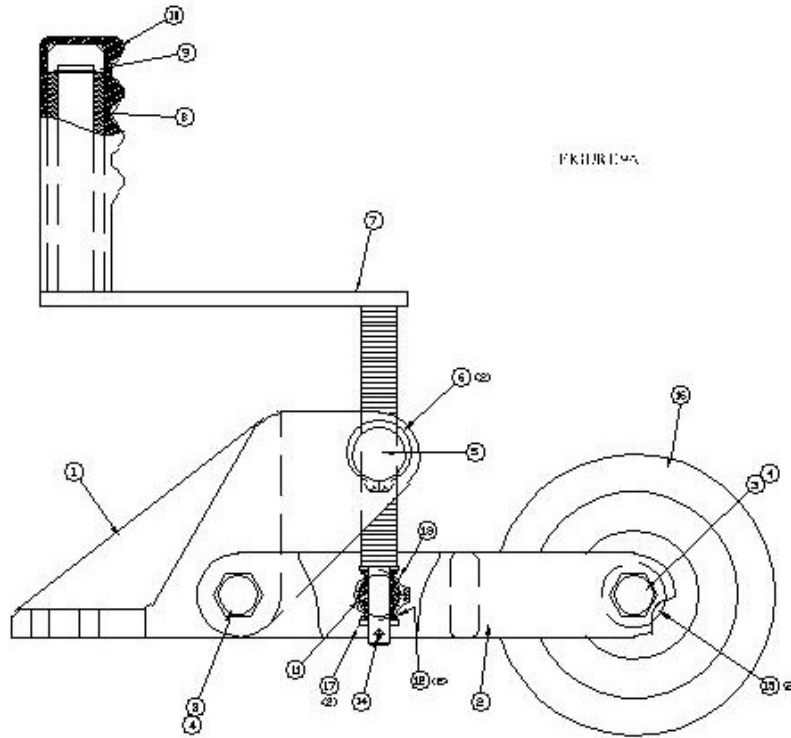
ITEM	QUANTITY	PART NUMBER	DESCRIPTION
1	1	066-583	Wheel Mount Supports
2	1	066-575	Wheel Mounts
3	2	000-620	Bolts, MHH, 1/2-13 x 3 1/2"
4	2	000-957	Nuts, 1/2-13 LOCK
5	1	066-850	Upper Crank Shafts
6	2	004-944	Snap Rings, 1" Ext.
7	1	066-834	Crank Assembly, IT
8	1	018-368	Sleeve, Crank Handle
9	1	001-848	Wheel Crank Assembly
8	1	066-869	Lower Crank Shafts
9	2	044-970	Ring, Snap-5/8" Ext.
10	1	002-062	Grip, Large
11	1	066-869	Shaft, Crank Support-Lower
12	2	044-970	Bushing, Oilite Flange-3/8" ID
13	2	001-856	Ring, Snap-3/4" Ext.
14	1	001-503	Cotter Pin, 1/8" x 1 1/2"
15	2	000-078	Washer, 1/2" Flat
16	1	066-842	Wheel, 5" OD x 1/2" ID
19	4	050-709	Bolts, MHH, 5/16-18 x 1 1/4"
20	4	000-140	Lock Washers 5/16"
21	4	000-930	Lock Nuts 5/16"
22	2	000-043	Washer, 5/16 Flat

WHEEL ASSEMBLY PARTS LIST (P.N. 024-348)
(SEE FIGURE 9B)

1	1	024-338	Wheel Mount Supports
2	1	024-378	Wheel Mounts
3	2	000-620	Bolt, NIM 1/2-13 x 3.50
4	2	000-957	Nut, 1/2-13 UNC Self Locking
5	1	066-850	Shaft, Crank Support Upper
6	2	004-944	Ring, Snap-1" Ext.
7	1	066-834	Crank Assembly, IT
8	1	018-368	Sleeve, Crank Handle
9	1	001-848	Ring, Snap-5/8" Ext.
10	1	002-062	Grip, Large
11	1	066-869	Shaft, Crank Support-Lower
12	2	044-970	Bushing, Oilite Flange-3/8" ID
13	2	001-856	Ring, Snap-3/4" Ext.
14	1	001-503	Cotter Pin, 1/8" x 1 1/2"
15	2	000-051	Washer, 3/8" Flat
16	1	024-478	Wheel, 6" OD x 3/8" ID
17	2	000-043	Washer, 5/16 Flat
19	4	050-709	Bolt, MHH, 5/16-18 x 1.25
20	4	000-140	Washer, 5/16 Lock
21	4	000-930	Nut, 5/16-18 UNC Self Locking
22	2	000-043	Washer, 5/16 Flat
23	1	301-469	Bolt-MHH, 3/8-16 x 3.50 Lg
24	2	000-892	Nut-3/8-16, Self Locking

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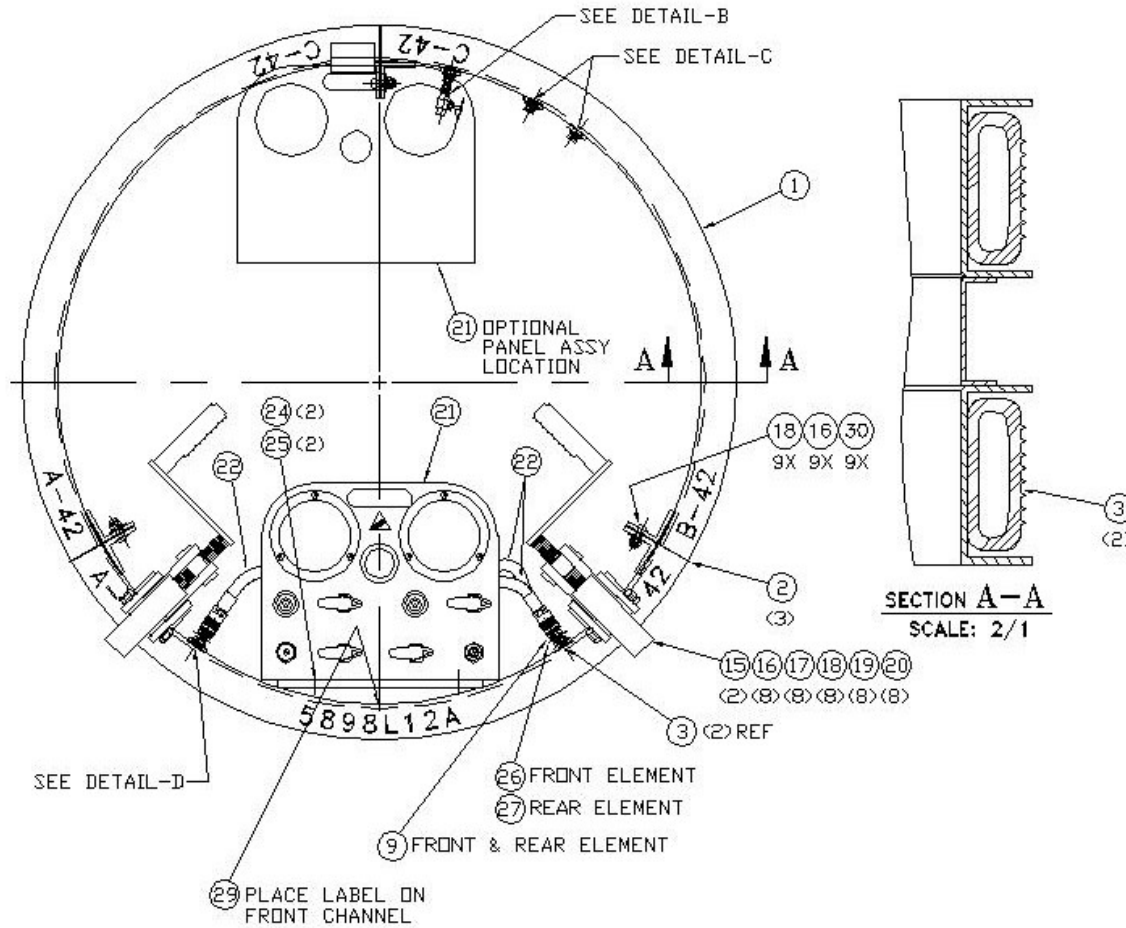


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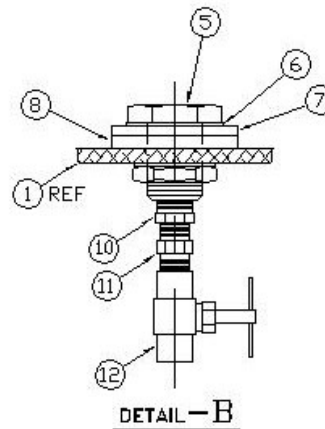
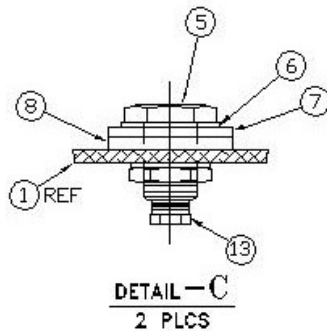
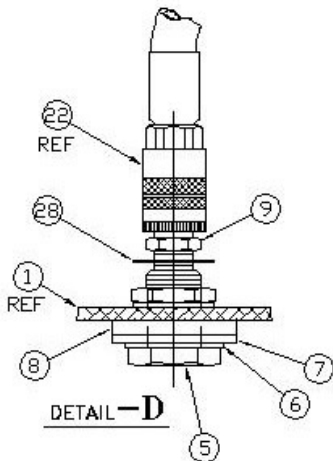
JOINT TESTER SIZE	JOINT TESTER PART #	PLAIN JOINT TESTER	WELD ASSEMBLY PART #	END ELEMENT PART #
42"	009-088	012-088	009-618	063-363
46"	504-098	NA	057-058	057-068
48"	009-098	012-098	009-628	063-371
54	009-108	012-148	009-638	063-398
60"	009-118	012-118	009-648	063-401
66"	009-128	012-128	009-658	063-428
72"	009-138	012-138	009-668	063-436
78"	009-158	012-158	009-678	070-444
84"	009-168	012-168	009-688	063-452
90"	009-178	012-178	009-698	063-460
96"	009-188	012-188	009-708	063-479
102"	009-198	012-198	009-718	063-487
108"	009-208	012-208	009-728	063-495
114"	009-218	012-218	009-738	063-509
120"	009-228	012-228	009-748	063-517
1200 MM	009-348	N/A	009-848	063-592
1300 MM	009-358	N/A	009-858	063-606
1700 MM	009-348	N/A	009-898	063-649
1800 MM	009-408	503-628	009-908	063-657
1900 MM				
1950 MM	N/A	502-708	039-238	039-278
2000 MM				
2088 MM	504-038	N/A	056-388	056-398
2100 MM	501-398	N/A	031-178	031-168
2800 MM	503-718	N/A	009-998	063-762
3200 MM	500-158	N/A	024-118	019-268
3450 MM	500-128	N/A	024-088	024-108

SLIP-RESISTANT JOINT TESTERS

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SECTION A-A
SCALE: 2/1



MANHOLE SAFETY PROCEDURE

RECOMMENDED SAFETY PROCEDURE FOR ENTRANCE INTO MANHOLES OR CONFINED SPACES

WARNING: THESE RECOMMENDATIONS ARE TO BE USED AS A GENERAL GUIDELINE ONLY.

ALTHOUGH CHERNE RECOMMENDS THESE FOLLOWING GUIDELINES, IT DOES NOT WARRANT, REPRESENT, OR ASSUME ANY RESPONSIBILITY THAT THESE RECOMMENDATIONS WILL FULFILL ALL APPLICABLE FEDERAL, STATE, OR LOCAL REQUIREMENTS. CHERNE ASSUMES NO LIABILITY FOR EITHER PERSONAL INJURY OR CONSEQUENTIAL DAMAGES THAT RESULT FROM THE RELIANCE ON THESE RECOMMENDATIONS.

WARNING: IT IS THE PRODUCT USER'S RESPONSIBILITY TO READ AND COMPLY WITH ALL APPLICABLE REGULATIONS. REFER TO THE CODE OF FEDERAL REGULATIONS, "CFR" PART 1926 AND ALL OTHER PERTINENT FEDERAL, STATE, AND LOCAL REGULATIONS.

ALWAYS OUTFIT YOURSELF WITH THE NECESSARY SAFETY EQUIPMENT FOR ENTRANCE INTO A MANHOLE OR CONFINED SPACE. THIS MAY INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING ITEMS (REFER TO WARNING STATED IMMEDIATELY ABOVE):

Recommended equipment is as follows:

- | | |
|---|--|
| A. Safety Hat | G. Ear Protection |
| B. Safety Glasses | H. Hazardous Gas Detector and Oxygen Monitor |
| C. Respirator or Self-Contained Air Source | I. Manhole or Confined Space Ventilation |
| D. Safety Harness, Ropes, and Winching System | J. Protective Clothing |
| E. Safety Shoes or Boots | K. Safety Ladders |
| F. Protective Gloves | L. Any Other Recommended or Required Equipment |

ALWAYS ENSURE THAT ALL EQUIPMENT MEETS OR EXCEEDS THE MINIMUM REQUIREMENTS OF ALL APPLICABLE REGULATORY GUIDELINES. ALL EQUIPMENT SHOULD BE PROPERLY MAINTAINED, STORED, CALIBRATED IF NECESSARY, AND INSPECTED PRIOR TO EACH USE, IN COMPLIANCE WITH APPLICABLE REGULATIONS AND EQUIPMENT MANUFACTURER RECOMMENDATIONS.

ALWAYS PROPERLY VENTILATE MANHOLE OR CONFINED SPACE BEFORE ENTERING AND MAINTAIN VENTILATION WHILE IN MANHOLE OR CONFINED SPACE.

ALWAYS THOROUGHLY CHECK AT ALL LEVELS FOR HAZARDOUS GASES AND PROPER OXYGEN LEVELS (20% MINIMUM). CONTINUOUSLY MONITOR THESE LEVELS WHEN WORKERS ARE IN THE MANHOLE.

NEVER ENTER A MANHOLE OR CONFINED SPACE WITHOUT CO-WORKER ASSISTANCE. CO-WORKERS MUST BE PROPERLY TRAINED IN SAFETY REQUIREMENTS FOR ACCESS TO MANHOLES OR CONFINED SPACES.

IF YOU ENCOUNTER OR OBSERVE ANY CONDITIONS THAT ARE NOT EXPLAINED HERE OR NOT FULLY UNDERSTOOD BY YOU, NOTIFY YOUR SUPERVISOR OR SAFETY DIRECTOR BEFORE PROCEEDING.

DANGER

ALWAYS CONSULT WITH PROPER STATE, LOCAL, AND FEDERAL AGENCIES TO INSURE THAT ALL REQUIRED REGULATIONS ARE BEING FULFILLED.

FAILURE TO COMPLY WITH PROPER SAFETY REGULATIONS MITE RESULT IN SERIOUS BODILY INJURY OR DEATH!

LIMITED WARRANTY

Manufacturer warrants all products manufactured by it will be free from defects in material and workmanship for one (1) year following the date of manufacture. If any of the goods are found to be defective, such goods will, at manufacturer's option be replaced or repaired at manufacturer's cost. The parties hereto expressly agree that buyer's sole and exclusive remedy against the manufacturer shall be for the repair or replacement of defective goods as provided herein. (The sole purpose of the stipulated exclusive remedy shall be to provide the buyer with free repair and replacement of defective goods in the manner provided herein. The exclusive remedy shall not be deemed to have failed of its essential purpose so long as the manufacturer is willing and able to repair or replace defective goods in the prescribed manner.) Goods which may be sold by manufacturer but are not manufactured by it are not warranted by manufacturer, but are sold only with the warranties, if any, of the original manufacturers thereof. (This warranty does not cover labor or other costs or expenses to remove or install any defective, repaired or replaced goods.) Manufacturer's warranty does not apply to any goods which have been subjected to misuse, mishandling, misapplication, neglect (including but not limited to use of unauthorized parts or attachments), or adjustment or repair performed by anyone other than manufacturer or one of manufacturer's authorized agents.

Any claim by buyer with reference to the goods sold hereunder shall be deemed waived by the buyer unless submitted in writing to manufacturer within the earlier of (1) thirty (30) days following the date buyer discovered or by reasonable inspection should have discovered, any claimed breach of the foregoing warranty, or (2) thirteen (13) months following the date of manufacture. Any cause of action for breach of the foregoing warranty shall be brought within one year from the date the alleged breach was discovered or should have been discovered, whichever comes first.

LIMITATION OF LIABILITY. Manufacturer's liability (whether under the theories of breach of contract or warranty, negligence, or strict liability) for its goods shall be limited to repairing or replacing parts found by the manufacturer to be defective, or at manufacturer's option, to refunding the purchase price of such goods or parts thereof.

DISCLAIMER OF CONSEQUENTIAL DAMAGES. In no event shall manufacturer be liable for consequential damages arising out of or in connection with this agreement, including without limitation breach of any obligation imposed on manufacturer hereunder or in connection herewith. Consequential damages for purposes hereof shall include, without limitation (including death) to any person, or loss of or damage to property (including without limitation property handled or processed by the use of goods). Buyer shall indemnify manufacturer against all liability, cost or expense which may be sustained by manufacturer on account of any such loss, damage or injury.

DEFECTIVE PRODUCTS POLICY. To obtain performance under this warranty, any product suspected of having a manufacturing defect in materials or workmanship at manufacturers request must be returned to CHERNE INDUSTRIES INCORPORATED, freight prepaid, for inspection. A returned goods authorization must be obtained before shipping any product back to CHERNE. Call 1-800-843-7584 and ask for customer service.

CUSTOMER TRANSPORTATION REIMBURSEMENT. Whenever CHERNE repairs or replaces a product at CHERNE'S expense CHERNE will reimburse the distributor by credit memo, the same surface freight amount it cost CHERNE to return the warranty items.

The foregoing warranty is in lieu of all other warranties express or implied, including those of merchantability or fitness for any purpose not expressly set forth herein. No affirmation of manufacturer, by words or action, other than as set forth in this language shall constitute a warranty.

FROM FORM 013-348, REV. M
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